

## IN THE CLAIMS

Following is a complete set of claims as amended with this response, which includes amendments to claims 1, 3-20 and adds new claims 51-74.

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1           1. (currently amended) A method of detecting the presence or measuring the  
2   quantity of a target analyte in a sample reagent comprising ~~the steps of:~~  
3           contacting a microfabricated electrochemical biosensor with the sample reagent, the  
4   microfabricated electrochemical biosensor comprising: (a) a substrate; and (b) at least two  
5   electrically conductive electrodes fabricated on the substrate by integrated circuit  
6   technology, each of the electrical conductive electrodes consisting of a single layer of an  
7   electrically conductive material;  
8           containing the sample reagent in contact with the conducting electrodes;  
9           measuring a electrical signal output from the microfabricated electrochemical  
10   biosensor; and  
11          determining from the signal output the presence and/or quantity of the target  
12   analyte in the sample reagent.

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1           2. (original) The method of claim 1, wherein the electrochemical biosensor further  
2   comprises an adhesive underneath each of the electrodes, the adhesive allowing for better  
3   adhesion of each of the electrodes to the substrate.

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1           3. (currently amended) The method of claim 1, 2 wherein the sample reagent is a  
2   biological fluid containing macromolecules.

1           4. (currently amended) The method of claim 1, 2 wherein the sample reagent is a  
2   biological fluid containing ionic molecules or atoms.

1           5. (currently amended) The method of claim 1, 2 wherein the substrate is selected  
2   from the group consisting of silicon, gallium arsenide, plastic and glass.

1           6. (currently amended) The method of claim 1, 2 wherein the substrate comprises  
2 a material made out of silicon.

1           7. (currently amended) The method of claim 1, 2 wherein the electrically  
2 conductive material is selected from the group consisting of gold, aluminum, chromium,  
3 copper, platinum, titanium, nickel and titanium.

1           8. (currently amended) The method of claim 1, 2 wherein the electrically  
2 conductive material is gold.

1           9. (currently amended) The method of claim 2, wherein the adhesive is selected  
2 from the group of consisting of chromium, titanium, and glue.

1           10. (currently amended) The method of claim 2, wherein the adhesive comprises  
2 chromium.

1           11. (currently amended) The method of claim 1, 2 wherein the substrate further  
2 comprises a well structure containing at least one of the electrodes.

1           12. (currently amended) The method of claim 1, 2 wherein the electrochemical  
2 biosensor comprises at least three electrically conductive electrodes.

1           13. (currently amended) The method of claim 12, wherein each of the electrically  
2 conductive electrodes consists of a single layer of gold.

1           14. (currently amended) The method of claim 1, 2 wherein ~~the step of~~ determining  
2 from the signal output the presence and/or quantity of the target analyte in the reagent  
3 further comprises ~~the steps of~~:

4           calibrating the electrochemical biosensor with a first calibrating solution that  
5 contains a known amount of the target analyte to be detected and a second calibrating  
6 solution that contains an undetectable amount of the target analyte to be detected;  
7           obtaining a reference signal output; and

8 comparing the reference signal with the measured signal to determine the presence  
9 and/or quantity of the molecules in the sample reagent.

1 15. (currently amended) The method of claim 14, wherein the substrate is selected  
2 from the group consisting of silicon, gallium arsenide, plastic and glass.

1 16. (currently amended) The method of claim 14, wherein the electrically  
2 conductive material is selected from the group consisting of gold, aluminum, chromium,  
3 copper, platinum, nickel and titanium.

1 17. (currently amended) The method of claim 14, wherein the electrically  
2 conductive material is gold.

1 18. (currently amended) The method of claim 14, wherein the adhesive is selected  
2 from the group of material consisting of chromium, titanium, and glue.

1 19. (currently amended) The method of claim 14, wherein the substrate further  
2 comprises a well structure underneath at least one of the electrodes.

1 20. (currently amended) The method of claim 14, wherein a surface on at least one  
2 of the electrodes is surface modified for anchoring macromolecules on the surface.

1 21-50. (canceled)

1 51. (new) The method of claim 1, wherein the electrodes are in contact with the  
2 substrate.

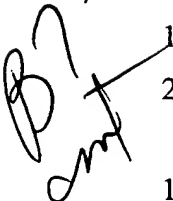
1 52. (new) The method of claim 1, wherein the electrically conductive material  
2 associated with each electrode extends from each electrode to an electrical pad positioned  
3 on the substrate.

1 53. (new) A microfabricated electrochemical biosensor, comprising:  
2 a substrate; and

3 at least two electrically conductive electrodes formed on the substrate, each of the  
4 electrical conductive electrodes including of a single layer of an electrically conductive  
5 material.

1 54. (new) The method of claim 53, wherein the electrodes are in contact with the  
2 substrate.

1 55. (new) The method of claim 53, wherein the layer of electrically conductive  
2 material associated with each electrode extends from each electrode to an electrical pad  
3 positioned on the substrate.

 1 56. (new) The biosensor of claim 53, wherein the electrodes are exposed to  
2 atmosphere.

1 57. (new) The biosensor of claim 53, further comprising:  
2 a self-assembly-monolayer formed on at least one of the electrodes.

1 58. (new) The biosensor of claim 53, further comprising an adhesive between the  
2 electrodes and the substrate.

1 59. (new) The biosensor of claim 53, wherein the substrate is selected from the  
2 group consisting of silicon, gallium arsenide, plastic and glass.

1 60. (new) The biosensor of claim 53, wherein the substrate comprises a material  
2 made out of silicon.

1 61. (new) The biosensor of claim 53, wherein the electrically conductive material  
2 is selected from the group consisting of gold, aluminum, chromium, copper, platinum,  
3 titanium, nickel and titanium.

1 62. (new) The biosensor of claim 53, wherein the electrically conductive material  
2 is gold.

1 63. (new) The biosensor of claim 53, wherein the substrate further comprises a  
2 well structure containing at least one of the electrodes.

1 64. (new) The biosensor of claim 53, wherein the electrochemical biosensor  
2 comprises at least three electrically conductive electrodes.

1 65. (new) A method of forming a microfabricated biosensor, comprising:  
2 providing a substrate; and  
3 forming at least two electrically conductive electrodes on the substrate, each of  
4 the electrical conductive electrodes including of a single layer of an electrically  
5 conductive material.

1 66. (new) The method of claim 65, wherein the electrodes are formed such that  
2 the electrically conductive material is in contact with the substrate.

1 67. (new) The method of claim 65, wherein the substrate includes a layer of silica  
2 over a layer of silicon.

1 68. (new) The method of claim 65, wherein the electrodes are formed such that  
2 the electrically conductive material extends from each electrode to an electrical pad  
3 positioned on the substrate.

1 69. (new) The method of claim 65, wherein the substrate is selected from the  
2 group consisting of silicon, gallium arsenide, plastic and glass.

1 70. (new) The method of claim 65, wherein the electrically conductive material is  
2 gold.

1 71. (new) The method of claim 65, wherein the substrate includes a well and at  
2 least one of the electrodes is formed in the well.

i 72. (new) The method of claim 65, wherein the electrochemical biosensor  
2 comprises at least three electrically conductive electrodes.

1 73. (new) The method of claim 65, wherein integrated circuit fabrication  
2 techniques are employed to form the electrodes on the substrate.

1 74. (new) The method of claim 65, wherein a lift-off process is employed to form  
2 the electrodes.

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